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Spectral Analysis, Differential Equations and Mathematical Physics: A Festschrift in Honor of Fritz Gesztesy's 60th Birthday

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Preface

A room without books is like a body without a soul.
— Attributed to Cicero (106 BC – 43 BC)

Fritz (Friedrich) was born to parents Friederike and Franz Gesztesy on November 5, 1953, in Leibnitz, Austria. He was raised there together with his younger sister, Doris.

Fritz attended the local Realgymnasium from 1964 to 1972 and, soon after the age of twelve, developed his passion for physics and mathematics. From this period onwards, he spent large parts of his free time, on one hand, in his electronics workshop (repairing and reassembling vacuum tube radios and TVs, just before the transistor revolution took place) and, on the other hand, studying B. Baule's seven-volume textbook "Die Mathematik des Naturforschers und Ingenieurs", known as "Der Baule" (developed at the Technical University of Graz, Austria).

Erwin Schödinger Institute, Vienna, July 2011.

Given his strong interests in physics and mathematics, the study of Theoretical Physics seemed the most natural choice to him and so he enrolled at the University of Graz in the fall of 1972. After studying seven semesters, he presented his dissertation on a topic in quantum field theory in early 1976. His Ph.D. advisors were Heimo Latal (University of Graz) and Ludwig Streit (University of Bielefeld,

Germany). At this point he had become disillusioned with Theoretical Physics *per se*. Strongly influenced by the monograph of T. Kato and the four-volume treatise by M. Reed and B. Simon, and especially under the guiding influence of Ludwig Pittner (University of Graz), Harald Grosse and Walter Thirring (both at the University of Vienna), and the four-volume course on Mathematical Physics by the latter, Fritz decided to devote his future energies to areas in Mathematical Physics.

Fritz was an instructor at the Institute of Theoretical Physics of the University of Graz from 1975, became Assistant Professor there in 1977, and Associate Professor (Docent) in 1982, a position he held until 1988, with several interruptions: The academic years 1980–81 and 1983–84 were spent at the University of Bielefeld as an Alexander von Humboldt fellow. Around 1986 the idea of a possible switch of continents was raised in conversations with Evans Harrell (Georgia Tech, Atlanta), and this idea slowly, but steadily, took more concrete form. After a Max Kade fellowship for the academic year 1987–88 at the California Institute of Technology, Pasadena, he assumed the position of Full Professor at the Department of Mathematics at the University of Missouri, Columbia, in the fall of 1988, his current affiliation. From 2002 he has held the M. & R. Houchins Distinguished Professorship.

Just a few days before his move to Columbia, Missouri, Fritz and Gloria Benoit were married in Bakersfield, California, in August 1988.

Fritz and Gloria on Maui, Hawaii, June 2008.

Fritz credits Ludwig Streit (Bielefeld), Sergio Albeverio (Bochum and Bonn), Raphael Høegh-Krohn (Oslo), and especially Barry Simon (Caltech) as having had the most influence on him over the years. In addition to his two years at Bielefeld and the year at Caltech, he spent time at various research institutions, including Leuven; CNRS, Luminy, Marseille; LPTHE, Orsay; BiBoS, Bielefeld; IMA, Minneapolis, Minnesota; CCM, Madeira; University of Vienna; Center for Advanced

Study (CAS) at the Norwegian Academy of Science and Letters. Fritz spent many summer months since 1990 collaborating with Helge Holden at the Norwegian University of Science and Technology, Trondheim, Norway, and with Barry Simon at Caltech.

Fritz has received a number of honors, including the Theodor Körner Award in the Natural Sciences, Vienna (1983), the Ludwig Boltzmann Award of the Austrian Physical Society (1987), and election to the Royal Norwegian Society of Sciences and Letters, Trondheim, Norway (2002). He was elected Fellow of the American Mathematical Society, inaugural class of 2013.

He has supervised or co-supervised three Ph.D. students at the University of Graz, one at the Technical University of Graz, one at the University of Louvain-La-Neuve, and nine at the University of Missouri. He takes great pride in the fact that some have become very successful in their own careers and now have successful students of their own. According to the Mathematics Genealogy Project, Fritz has 26 mathematical descendants.

Fritz's editorial responsibilities have included Mathematische Nachrichten, Journal of Mathematical Analysis and Applications, Operators and Matrices, and Journal of Spectral Theory.

Fritz's research interests developed from spectral and scattering theory for Schrödinger and Dirac-type operators in his early years until about 1988, to integrable systems and their connections with spectral theory (via trace formulas, etc.) from about 1988 to 2006. Since then his interests have primarily returned to various aspects of spectral theory for elliptic partial differential operators of relevance in mathematical physics.

Fritz is an exceptionally generous collaborator, sharing ideas and never saying no to immense calculations. He prefers to write the final version of the paper himself, securing precise statements, consistent notation and accurate bibliographies. No reference is too obscure to be checked carefully! Thus, it is no surprise that Fritz at the time this was written, has 95 co-authors and he lists over 240 publications. The author citation data base of MathSciNet shows that Fritz is cited 2295 times by 917 authors. His 1988 Springer monograph "Solvable Models in Quantum Mechanics", written jointly with S. Albeverio, R. Høegh-Krohn, and H. Holden, was translated into Russian and appeared with Mir Publishers in 1991. Its second edition, supplemented with an appendix by P. Exner, appeared in 2005 in the AMS-Chelsea series. It continues to be the authoritative treatise on solvable point interaction models and to this day remains an inspiration for research in this area.

As an avid collector of books (his personal library has approximately 5000 titles), Fritz preferred to have a volume of mathematical contributions instead of a conference in his honor. "Books are for life," he likes to say. Hence, this collection is primarily devoted to contributions in areas dear to his heart: Spectral Theory, Differential Equations, and Mathematical Physics. We are grateful to Sergei Gelfand,

Christine Thivierge, and the staff at AMS for their support throughout the preparations of this volume. We also thank all the authors for their contributions and the referees for their invaluable assistance.

Happy Birthday, Fritz!

Helge Holden
Barry Simon
Gerald Teschl

January, 2013

A mathematical descendants list

- Fritz, Universität Graz, 1976
  - Vladimir Batchenko, University of Missouri - Columbia, 2005
  - Ronald Dickson, University of Missouri - Columbia, 1998
  - Georg Karner, Universität Graz, 1986
  - Miroslaw Mystkowski, University of Missouri - Columbia, 1997
  - Charlotte Nessmann, Universität Graz, 1984
  - Manfred Perusch, Universität Graz, 1982
  - Ratnam Ratnaseelan, University of Missouri - Columbia, 1996
  - Walter Renger, University of Missouri - Columbia, 1996
  - Juma Shabani, Université Catholique de Louvain, 1986
    - Mathias Hounkpe, Université d'Abomey-Calavi, 1996
    - Alfred Vyabandi, Université d'Abomey-Calavi, 2001
  - Wilhelm Sticka, University of Missouri - Columbia, 1995
  - Gerald Teschl, University of Missouri - Columbia, 1995
    - Kerstin Ammann, Universität Wien, 2013
    - Jonathan Eckhardt, Universität Wien, 2012
    - Katrin Grunert, Universität Wien, 2010
    - Johanna Michor, Universität Wien, 2005
    - Alice Mikikits-Leitner, Universität Wien, 2009
  - Mehmet Unal, University of Missouri - Columbia, 1995
  - Karl Unterkofler, Technische Universität Graz, 1989
    - Julian King, Universität Innsbruck, 2010
    - Helin Koc Rauchenwald, Universität Wien, 2011
    - Klaus Rheinberger, Universität Innsbruck, 2006
    - Konrad Schwarz, Universität Innsbruck, 2009
    - Robert Tratnig, Technische Universität Graz, 2005
  - Maxim Zinchenko, University of Missouri - Columbia, 2006

The most current information can be found at:
http://genealogy.math.ndsu.nodak.edu/id.php?id=11336

Publications of Friedrich (Fritz) Gesztesy[1]

1976:

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1978:

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